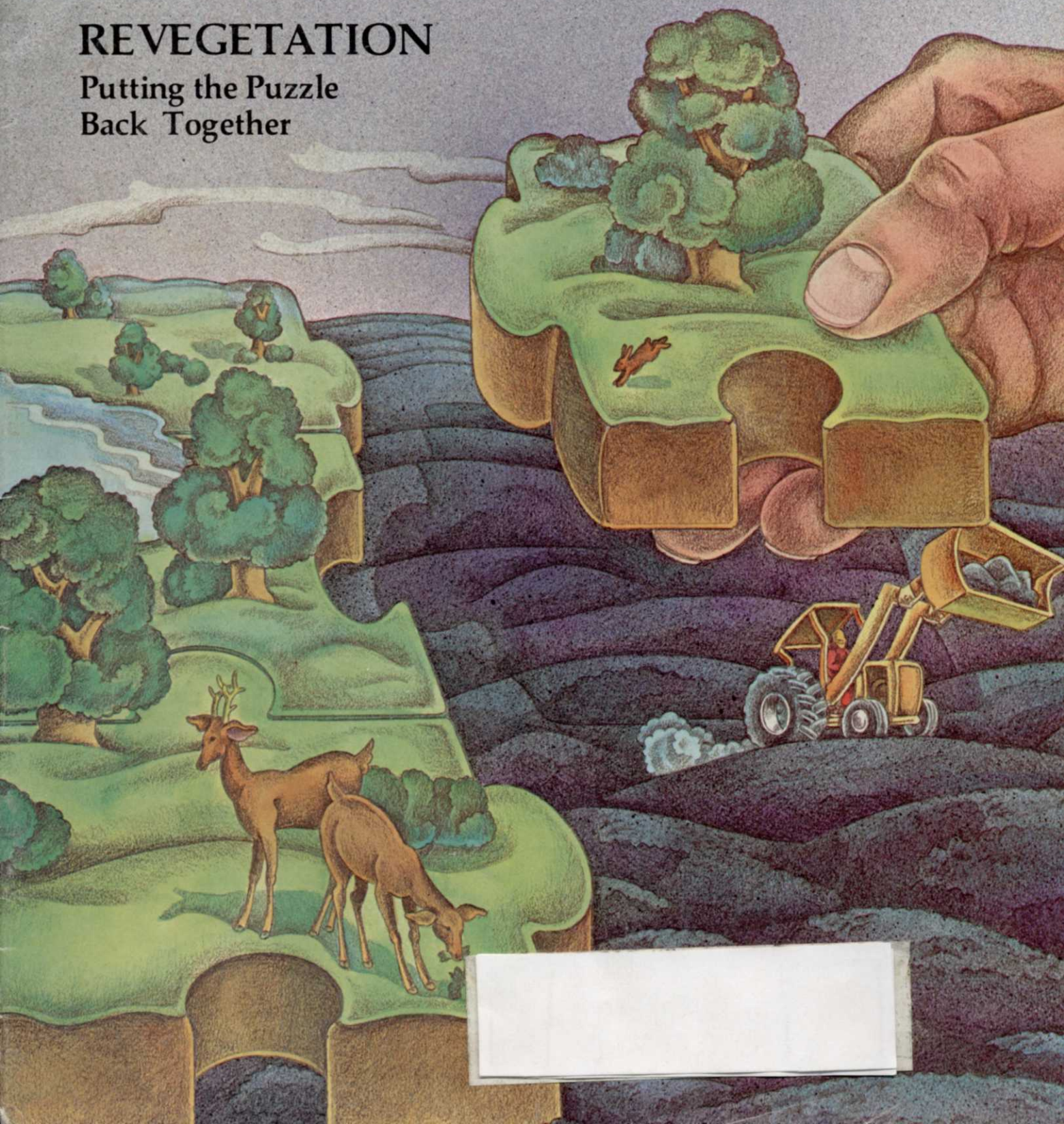
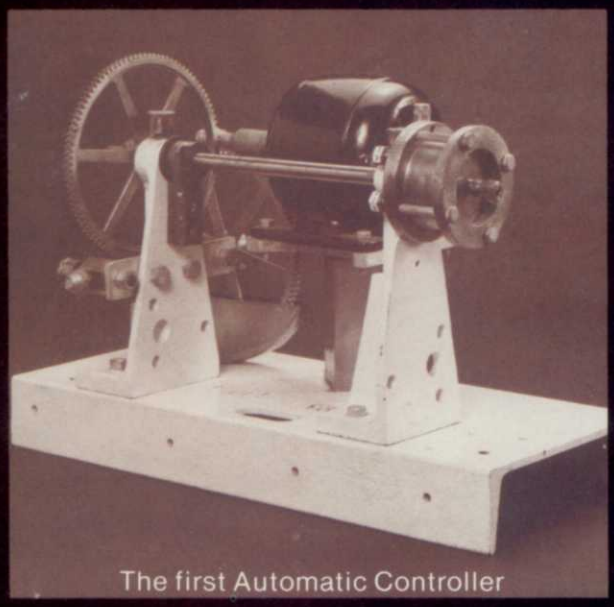
WEEDS TREES & TURF

$1.25 • NOVEMBER 1977

REVEGETATION

Putting the Puzzle Back Together





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"After 54 years: We're still the ONE"

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MOODY SPRINKLER CO., INC. 3020 Pullman Street, Costa Mesa, California 92627

WEEDS TREES & TURF®

NOVEMBER 1977, Vol. 16, No. 11

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Revegetation: Putting the Puzzle Back Together 14
As energy surpasses natural landscape in national importance, the demand for revegetation and reclamation services will skyrocket. There is a place for the landscape contractor in this development.

Fungus Blamed for Oak Decline in South 18
A hard-to-detect fungus disease is slowly killing oaks and other tree varieties in the South. A Texas researcher claims to have found a solution through tests on the Texas A&M campus.

Preventing Injury to Frosted Turf 25
Foot and vehicle traffic on golf courses, athletic fields, and other turf should be restricted during frost conditions to prevent damage.

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Single Copy Price: $1.25 for current and all back issues. Foreign $1.50. Subscription Rates: WEEDS TREES AND TURF is mailed free, within the U.S. and possessions and Canada, to qualified persons engaged in the vegetation care industry and related fields in controlled circulation categories. Non-qualified subscriptions in the U.S. and Canada are $10.00 per year; other countries, $12.00 per year. Controlled circulation postage paid at Cleveland, Ohio 44101.

Nurserymen Create National Marketing Plan

Take a guess. What percentage of homeowners or businesses realize the value of a properly landscaped lot? My guess is 20 percent or less. Out of those who do realize it, only a few actually make the investment in ornamentals, trees, and other landscaping devices to achieve an attractive result.

Market penetration appears fairly shallow wouldn't you say?

Something is needed to educate all these potential customers to the value of landscaping, something on a national scale and at a modest cost to industry members who would benefit tremendously by it. Just look at the results a few large lawn service companies obtained through national advertising.

Why hasn't this happened for nursery products? Primarily because we lack the very large, national companies present in lawn service. We thus lack the national advertising and image building programs necessary to encourage homeowner and business investment in proper landscaping.

The **American Association of Nurserymen, Inc.,** is going to do something about it. It has come up with a plan to provide the national exposure needed, plus the market research to effectively direct promotion.

The plan takes form under the name **Nursery Marketing Council.** A voluntary national marketing program, NMC will receive its financial support from contributions based upon ¼ percent of plant material invoices of participating wholesalers and from contributions by their customers.

Under the management of the American Association of Nurserymen, NMC will supply the nursery industry with professional market research and analysis, to be followed by an advertising and public relations program to increase the sale of plant material and related products.

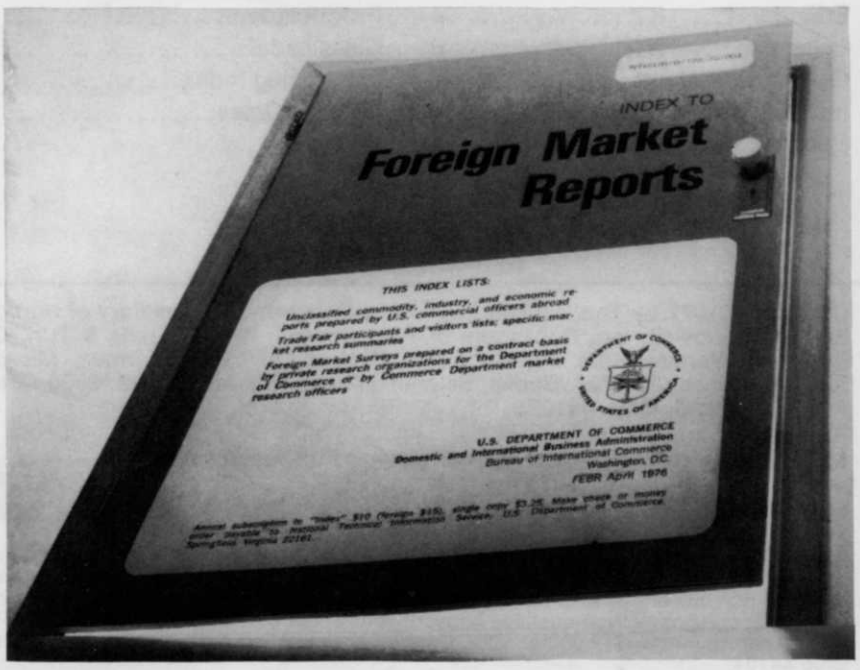
The association will direct NMC's programs **to benefit not only the nursery industry, but also all businesses that serve to support and enhance nursery products.**

We think it is a very worthwhile cause. We also believe it presents **an opportunity for landscapers to piggyback on national promotion with local advertising of their own.**

NMC is just beginning its research work. Promotion will not begin likely until the end of next year or possibly 1979. We urge you to support it through your nursery wholesaler and to prepare a local marketing plan of your own to go into effect at the same time NMC's promotion goes national.

Bruce F. Shank

If you're into exporting, or about to take the plunge, this could be your market research department.



It's your guide to one of the most useful libraries in the world. And it's issued by the U.S. Commerce Department on a monthly basis. Inside, you'll find a list of reports containing a wealth of information for the overseas marketer. Spot news; timely surveys of industrial, commodity, commercial and economic conditions in more than 100 countries; in-depth market research performed by the Commerce Department or private research firms overseas; as well as reports sent to Washington by U.S. Foreign Service Officers. For a free sample, write Secretary of Commerce, U.S. Department of Commerce, BIC-10B, Washington, D.C. 20230.

Ad Council

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For ad on following page circle 121 on free information card

beautiful

12 HP KOHLER K301S – serial 3033139. Still running strong after 3966 hours of operation on a greens mower at Salt Creek Golf Club, Itasca, Illinois.

If your equipment is Kohler powered, you know what we mean by "Beautiful."

You judge the beauty of your equipment in terms of long life, rugged dependability and strong factory service support.

It's the kind of beauty that lasts. Not the shiny paint and flashy chrome kind of beauty, but the kind of beauty that comes with years of dependable performance.

Dependable performance that adds value to your equipment. Value you can measure in hours, days, weeks and years on the job.

This is just one of the many beautiful examples that will convince you to specify Kohler cast iron 4-cycle engines (4 to 23 h.p.) on your equipment.

If you'd like more information on Kohler's Cast Iron beauties, write:

ENGINE DIVISION
KOHLER CO. KOHLER, WISCONSIN 53044

KOHLER

Letters

Directory Corrections

A number of errors slipped through our hands and into the September Manager's Guide to Chemicals and Supplies. Please note the changes in your directory.

Great Lakes Biochemical Co., Inc.

We would appreciate your notifying your readers that Great Lakes Biochemical Co., Inc. of 6120 West Douglas Avenue, Milwaukee, WI 53218 are manufacturers of liquid Algimycin® PLL-C and Slow Release Algimycin® PLL-C (a tablet) and than information about these products can be obtained by writing to us.

Agtronics Manufacturing Co.

It has come to our attention that in your September issue of Weeds Trees & Turf, on page 3 D, you have our company's address listed as 1560 State Street, Barstow, Calif. This is no longer our correct address.

We are now located at 756 Lakefield Road, Westlake Village, California 91361. Any further reference should be directed to this address.

Drexel Chemical Co.

In the September issue The Ansul Company is still listed as a producer of herbicides and growth retardants.

Earlier this year Drexel Chemical acquired the non-arsenical agricultural products (about 20 labels) from The Ansul Company. Included in the list was the growth retardant, "RETARD". Ansul discontinued production and sale of their agricultural product line the end of 1976 although they are still negotiating the sale of their brand names and labels for the arsenical herbicides.

We would appreciate being listed in future guides as the producer of growth retardant, "RETARD". Our address is Box 9306, 2487 Pennsylvania St., Memphis, Tn. 38109. (901/774-4370)

Royer Foundry & Machine Co.

On page 23-D, of your September issue, you list Royer Foundry & Machine Co. as a manufacturer of Brush Cutters, Chippers, Shredders and Woodsman Land Clearing Machines. On page 39-D, under the heading of Shredders, Royer isn't listed. Please, before using any such listings again, make the correction required. Shredders are the major products of Royer and it's downright embarrassing to see that they aren't even listed as manufacturers in WEEDS, TREES AND TURF.

Ditch Witch Equipment Co.

Ditch Witch is located in Perry, Oklahoma, not Perry, Ohio, as it was listed in your directory.

par ex® distributors
PROFESSIONAL PRODUCTS

Capitol Nursery Supply, Inc.
Phoenix, Arizona 85005
602/272-5508

Swift Agricultural Chemicals Corp.
Los Angeles, California 90023
213/264-5800

Foster-Gardner, Inc.
Coachella, California 92236
714/398-6151

Foster-Gardner, Inc.
Anaheim, California 92801
714/761-2521

Agri-Turf Supplies
Santa Barbara, California 93101
805/963-3691

Abate-A-Weed
Bakersfield, California 93308
805/589-0615

Robinson Fertilizer Company
Orange, California 92666
714/538-3575

Wilbur-Ellis Company
Chula Vista, California 92012
714/422-5321

Caceres Chemical Company
Los Angeles, California 90046
213/876-1460

Moyer Chemical Company
San Jose, California 95108
408/297-8088

Moyer Chemical Company
Santa Ana, California 92707
714/549-2871

Agri-Chem, Inc.
Ft. Lupton, Colorado 80621
303/288-4281

Avon Cider Mill
Avon, Connecticut 06001
203/677-0343

Swift Agricultural Chemicals Corp.
Winter Haven, Florida 33880
813/293-3147

McMullen Feed Store
Clearwater, Florida 33516
813/446-5961

Swift Agricultural Chemicals Corp.
Pompano Beach, Florida 33060
305/772-5550

Swift Agricultural Chemicals Corp.
Atlanta, Georgia 30304
404/955-0774

Lawn & Turf, Inc.
Conyers, Georgia 30207
404/483-4743

Swift Agricultural Chemicals Corp.
East St. Louis, Illinois 62201
618/271-5650

Turf Products, Ltd.
West Chicago, Illinois 60185
312/668-5537

Turf Management Supply Company
Rockton, Illinois 61072
815/624-7578

Paarlburg Chemical Company
South Holland, Illinois 60473
312/474-3086

Olsen Distributing Company
Barrington, Illinois 60010
312/381-9333

Professional Turf Specialties
Bloomington, Illinois 61701
309/829-5031

Indiana Seed Company, Inc.
Noblesville, Indiana 46060
317/773-5813

Deisch-Benham, Inc.
D/B/A Desco Chemical
Nappanee, Indiana 46550
219/773-7781

Chemi-Trol Chemical Company
Indianapolis, Indiana 46225
317/634-7963

Seedkem, Inc.
Evansville, Indiana 47708
812/424-2401

Tri-State Toro Company
Davenport, Iowa 52802
319/326-4416

Leisur-Aid A Division of Aidex Corp.
Council Bluffs, Iowa 51501
712/336-2441

Toro Service Center
Des Moines, Iowa 50318
515/243-0498

Big Bear Equipment Company
West Des Moines, Iowa 50318
515/243-1271

Champion Turf Equipment, Inc.
Wichita, Kansas 67209
316/943-0283

Rhodes Chemical Co.
Kansas City, Kansas 66103
913/432-2424

Swift Agricultural Chemicals Corp.
Glen Burnie, Maryland 21061
301/760-5927

Cornell Chemical & Equipment Co, Inc.
Baltimore, Maryland 21227
301/247-1525

Vaughan's Seed Company
Div. of Vaughan - Jacklin Corp.
Landover, Maryland 20785
301/322-8800

R.F. Morse & Son Company
Wareham, Massachusetts 02571
617/295-1553

L. & E. Chemical, Inc.
Div. of Lawn Equipment Corp.
Royal Oak, Michigan 48067
313/398/3636

J.J. Dill Company
Kalamazoo, Michigan 49005
616/349-7755

Turf Supply Company
St. Paul, Minnesota 55121
612/454-3106

Swift Agricultural Chemicals Corp.
Jackson, Mississippi 39205
601/366-4401

Champion Turf Equipment Inc.
Kansas City, Missouri 64114
816/333-8000

Champion Turf Equipment, Inc.
Springfield, Missouri 65803
417/869-2551

Professional Turf Specialties
St. Louis, Missouri 63155
314/225-7515

Big Bear Equipment, Inc.
Omaha, Nebraska 68137
402/331-0200

Rhodes Chemical Company
Lincoln, Nebraska 68507
402/466-8156

Clark County Wholesale Mercantile
Las Vegas, Nevada 89101
702/382-7700

The Terre Company
Saddle Brook, New Jersey 07662
201/843-6655

Vaughan's Seed Company
Div. of Vaughan - Jacklin Corp.
Bound Brook, New Jersey 08805
201/356-4200

Wagner Seed Company, Inc.
Farmingdale, New York 11735
516/293-2920

Eastern Turf Equipment, Inc.
Fayetteville, North Carolina 28301
919/483-0179

Swift Agricultural Chemicals Corp.
Wilmington, North Carolina 28401
919/371-2216

Sidney L. Dryfoos Company
Cleveland, Ohio 44146
216/439-4363

Van Atta Seed & Imp. Company
Cincinnati, Ohio 45225
513/541-2051

C.O. Lowe Sales
Columbus, Ohio 43229
614/891-9668

Lee Road Nursery, Inc.
Cleveland, Ohio 44101
216/561-3786

Larry's Garden Center, Inc.
Maple Heights, Ohio 44137
216/662-3884

Binding Stevens Seed Co.
Tulsa, Oklahoma 74135
918/627-4480

Lawn & Golf Supply Co., Inc.
Phoenixville, Pennsylvania 19460
215/933-5801

Allen's Seed Store, Inc.
Slocum, Rhode Island 02877
401/294-2722

Bell Oil Company
No. Myrtle Beach, So. Carolina 29582
803/249-2616

Swift Agricultural Chemicals Corp.
Columbia, South Carolina 29250
803/254-5189

Central South Turf Distributor, Inc.
Nashville, Tennessee 37211
615/832-7725

Swift Agricultural Chemicals Corp.
Houston, Texas 77002
712/682-6217

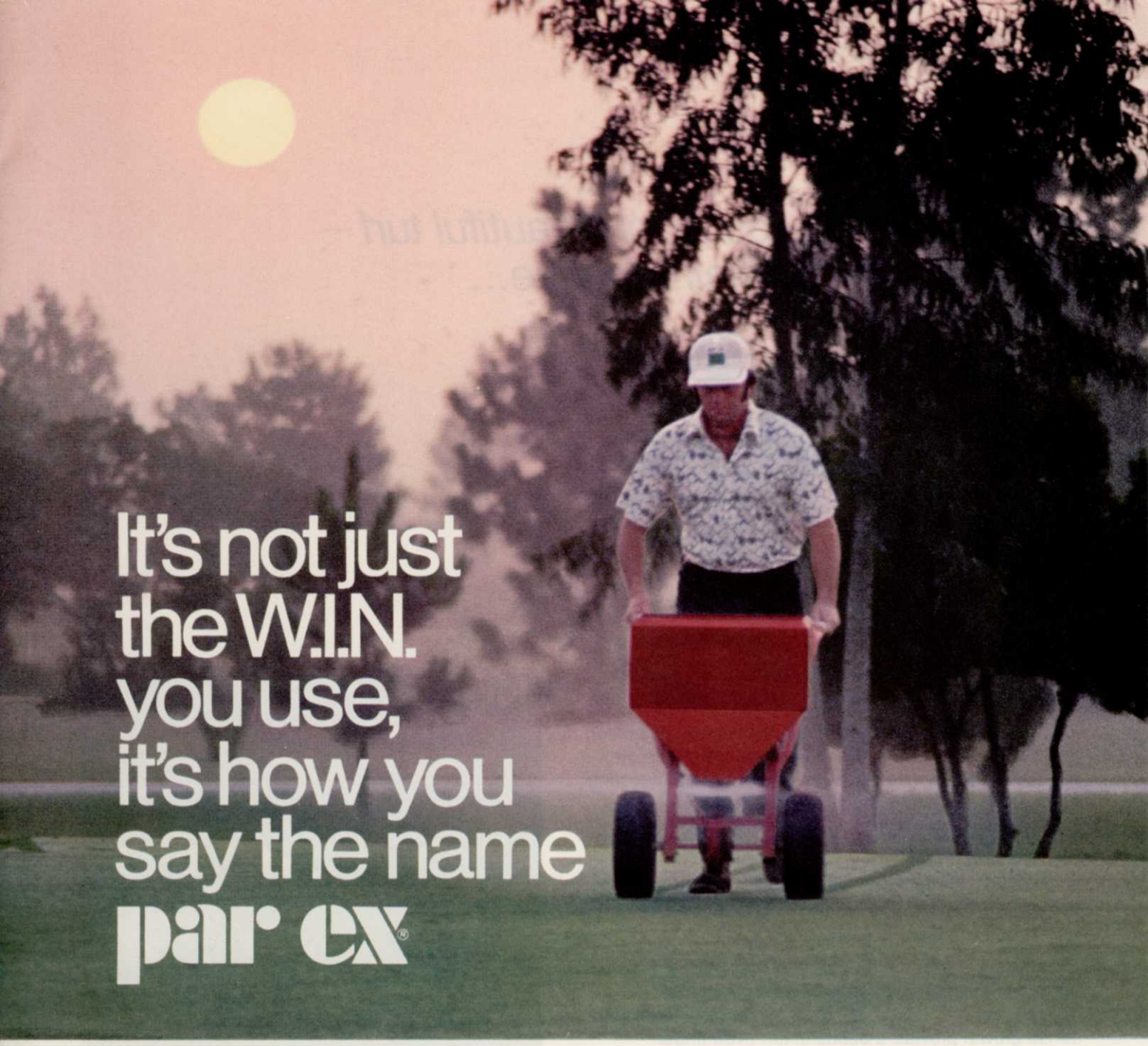
Turf & Garden
Division of Todd Farm Equipment, Inc.
Chesapeake, Virginia 23320
804/543-2071

Swift Agricultural Chemicals Corp.
Vancouver, Washington 98660
206/696-3321

Turf Management Supply Company
Sun Prairie, Wisconsin 53590
608/837-5598

Reinders Brothers Inc.
Elm Grove, Wisconsin 53122
414/786-3300

Circle 105 on free information card



All water insoluble nitrogen (W.I.N.) fertilizers are not alike. Some are activated by soil bacteria. Others by temperature. But IBDU® (31-0-0) and PAR EX fertilizer mixes with IBDU are activated very slowly by soil moisture. Nitrogen is released at a controlled, even rate that can't be hurried by high temperatures or excessive moisture.

It's important on high maintenance turfgrass to control the level of nitrogen feeding. Excessive bursts of nitrogen can be a greater problem than a nitrogen deficiency.

Custom formulated to exacting specifications of the professional turfgrass manager, IBDU and PAR EX fertilizer mixes with IBDU provide a controlled level of nitrogen nutrition that stimulates root growth, shoot density, rich green color and improves overall plant hardiness.

Let water insoluble IBDU (31-0-0) and PAR EX fertilizer mixes with IBDU perform for your turf. After all, performance is the name of the game.

par ex®
PROFESSIONAL PRODUCTS

Swift Agricultural Chemicals Corporation
Professional Products Division
P.O. Box 1996
Winter Haven, Florida 33880

Circle 105 on free information card

Build your reputation for beautiful turf – even under low maintenance...

PLANT

Birka

Kentucky Bluegrass

A newcomer to the ranks of low maintenance Kentucky bluegrasses...one we're glad to stake our reputation on.

And you will, too. Because Birka has consistently proven its ability to maintain attractive appearance under low maintenance programs throughout eight years of testing at research stations in the U.S. and Canada.

If mildew or other common turfgrass diseases are a problem in your turf areas, Birka is a wise choice. It's ideal for golf courses, home lawns, athletic fields, any area which demands a combination of hardiness and good looks.

You won't have to pamper Birka. Yet if you do, it will reward you with even better performance. Birka greens up early in the spring and keeps its dark green color late into fall. Its narrow leaves, excellent creeping ability and dense growth provide a beautiful turf even under heavy use.

Birka is a turfgrass that can build your reputation.

It's building ours!

E. F. Burlingham & Sons, P. O. Box 217,
Forest Grove, OR 97116. Phone: (503) 357-2141;
Telex: 36-0274; Cable: Burlingham.

E.F. BURLINGHAM & SONS

Circle 106 on free information card

Government News

As predicted, cadmium is about to become the first naturally occurring substance subject to a notice of rebuttable presumption against registration (RPAR). The EPA's position document points to findings by the Carcinogen Assessment Group (CAG) that: (1) the number of tumors at sites removed from the site of injection increased significantly in animals injected with cadmium; (2) significant increases in prostate cancer were found in persons occupationally exposed to cadmium; and (3) chronic oral studies, reported as negative by their authors, must be considered inconclusive because of histopathological deficiencies. Cadmium triggers not only the oncogenic and mutagenic criteria for an RPAR but also can be considered to cause a human risk because of its teratogenic and fetotoxic effects, according to the document.

Contingency approval has been given to the Illinois pesticide applicator certification plan. The Department of Agriculture was noted as the State lead agency in administering the plan. An estimated 2,200 commercial applicators and 80,000 private applicators will need certification.

Amendments to the Montana plan were also published. They included adding an option which allows qualification of private applicators by completion of an approved training course and stating more clearly the responsibilities and duties of the Montana Department of Agriculture when conducting an inspection.

The Missouri applicator certification plan has been granted an extension of contingency approval until January 10, 1978.

A summary of the Alabama plan estimated 16,000 private and 1,000 commercial applicators will need to be certified. The plan calls for commercial applicators to pass a written exam and notes that private applicators must complete necessary paper work, discuss use of the pesticide with the County Extension Agent. The agent then certifies the form and forwards it to the Department of Agriculture where the decision is made whether to issue a restricted use pesticide use permit.

Wisconsin's plan offers three options for private applicator certification, including: (1) successful completion of a Wisconsin Cooperative Extension Service training session; (2) passage of written exam; and (3) non-reader certification by oral evaluation. The plan estimates 7,000 commercial and 40-80,000 private applicators will need certification.

Industry News

Gypsy moth damage doubled in 1977

The U.S. Department of Agriculture reports that tree defoliation by gypsy moth caterpillars in eight northeastern states totalled 1.6 million acres in 1977. This is nearly double the damage caused by the pests last year.

Pennsylvania forests bore the brunt of the infestation, as they have for the past several years. Nearly 1.3 million wooded acres in that state were hit. Pike County alone suffered damage on 264,284 acres.

Other states affected were Massachusetts with 133,081 defoliated acres; New York with 91,313; New Jersey with 39,185; Vermont with 33,435; and Maine with 2,010. New Hampshire and Rhode Island got off lightly by comparison. A total of only 445 acres were affected in those two states. Last year the caterpillars attacked over 7,580 acres in Rhode Island alone.

The excessive damage this year is believed to have resulted from conditions favorable to gypsy moth survival, according to USDA's Animal and Plant Health Inspection Service (APHIS). The potential exists for a similar situation in 1978. APHIS officials say the pests have not yet reached their peak strength. The infamous "Winter of '77" may have killed off many beneficial parasites, leaving the gypsy moth virtually unscathed.

APHIS officials say the moths are moving in a southwesterly direction, along the Appalachian Mountains. Oak trees, a favorite gypsy moth host, are abundant along this range.

Bogue cart production temporarily halted

Bogue Electric Manufacturing has called a hiatus of at least three months in the production of their four-wheel electric golf cars, according to Anthony Sabbatino, executive vice president. The company has been awarded a $22.6 million government contract which will require total utilization of its plant in Patterson, N.J.

The golf car will be back in production in a separate plant by January 1, 1978. Considerable research and development will be on-going during the intermediate time to affect improvements in design, style and operating features, added Sabbatino.

LCC is third group to affiliate with ALCA

The Landscape Contractors of Colorado have established formal affiliation with the national Associated Landscape Contractors of America, following approval actions by the Boards of Directors of both organizations. LCC, headquartered in Denver, becomes the third state group to be affiliated with ALCA as a Sponsoring Member. The California and Illinois Landscape Contractors Associations are the other two.

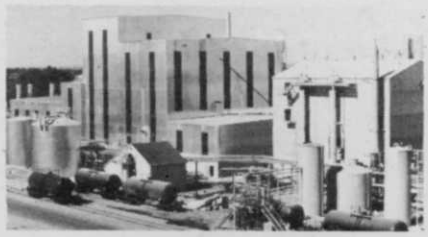
The Sponsoring Membership category is the term for organizational membership in ALCA and is the mechanism by which state or regional groups can affiliate with the national organization.

Under the arrangement, ALCA publications will be sent to LCC for reproduction and distribution to LCC members. LCC members will also be able to attend ALCA meetings and seminars at the member rates and will be able to purchase additional copies of ALCA publications at the member price.

New PGA headquarters complex to be built

A proposed new home for the Professional Golfers' Association is to be developed in northwest Palm Beach County, Florida, according to a recent announcement made by President Don Padgett and Palm Beach County developer E. Lloyd Ecclestone, Jr.

The PGA will retain five acres of a 625-acre tract upon which it will build its headquarters office building. The remainder will be leased to Ecclestone, who will build three golf courses, the clubhouse, a Hall of Fame, a library and museum and an educational facility. Development costs for the project are estimated at $15 million.



Chevron begins Unipel fertilizer production

Chevron Chemical Company has begun production at its new $9 million ORTHO complex fertilizer plant in Kennewick, Washington. The plant is expected to produce some 190,000 tons of Unipel fertilizer pellets annually.

The Unipel pellets contain various combinations of nitrogen, phosphate and potash and are manufactured to suit various soil and crop requirements. Each pellet is produced to operate with maximum efficiency in mechanized fertilizing equipment. The precise ingredient composition and uniform sizing will help growers achieve maximum benefit and cost control.

The plant itself is as high as a 10-story building and occupies more than 20,000 square feet. Chevron is also planning to begin production at newly constructed nitric acid and ammonium nitrate plants at Kennewick this month.

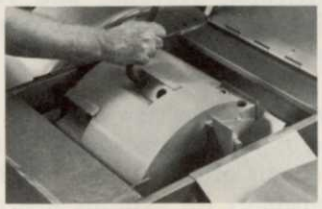
News continues on page 28

More than 120 years of manufacturing experience goes into every Mitts & Merrill Brush Chipper

For 30 years Mitts & Merrill Brush Chippers have been considered the standard of the industry by many buyers. That's because, over 120 years of engineering and manufacturing experience goes into each unit. This reputation for excellence has won for our Brush Chippers international recognition . . . has helped us maintain and build our market position.

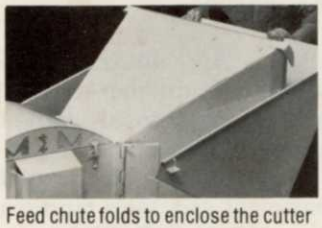
And, over the years, we have modified and improved our chippers. Some of our design features and available options are given below.

For further information on the various models of M&M Brush Chippers, write: Mitts & Merrill, Inc., 109 McCoskry, Saginaw, MI 48601 or Phone 517-752-6191.



Double-edged knives staggered around the large 16-in. diameter solid steel rotor provide smooth, efficient cutting without an external flywheel. Easily accessible.

Telescoping discharge chute rotates to give maximum flexibility to fill dump boxes. An adjustable bonnet at end of the chute controls direction of discharge.



Feed chute folds to enclose the cutter chamber during storage or transportation. It is side hinged so it may be swung away for easy access to cutter chamber.

Other standard features . . .

- Safety-lock pin helps prevent the accidental throw-out of knives not properly tightened.
- All steel rotor made in segments from steel plate and supported by ball bearings.
- Double-edged knives provide twice the cutting time between sharpenings.
- Easy loading is provided by the wide-angle feed chute which is free of obstructions.
- Tubular steel frame and torsion spring axle assure excellent roadability . . . rigidity.
- Integral rotor blower forces chips through discharge chute.

Optional features . . .

"Sound Conditioning"* to reduce noise level • Torque converter reduces shock loads on engine • Engine tachometer to determine optimum rpm • Engine hour meter for positive maintenance schedules • Electric wheel brakes for towing at highway speeds • Flasher warning lights for increased visibility • Engine side panels • Fuel gauge • Ignition cut-off switch from feed chute • Solinoid idle control at feed chute

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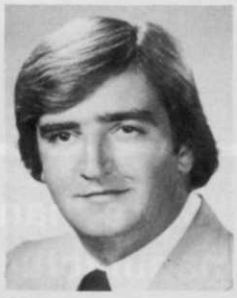
mitts & merrill
SUBSIDIARY walco WALCO NATIONAL CORPORATION

109 McCoskry St., Saginaw, Michigan 48601

People on the Move

Jacobsen Manufacturing has named **Roger J. Thomas** as vice president, International Sales Operations for the Turf Products Division. The promotion comes as part of the Division's Forward Business Plan to increase the international segment of their turf business. Thomas will take charge of developing worldwide sales distribution and coordinating international product planning, service, training, advertising and engineering. He began with Jacobsen in 1947. **Gary Foote** has joined Jacobsen as a field sales representative for the Turf Products Division. Based in Fort Lauderdale, Fla., he will serve Jacobsen's Southeast region, which includes North Carolina, South Carolina, Florida, Georgia, Alabama, Tennessee, and Kentucky. **Jeffrey D. Pinnow** has been appointed General Parts Marketing Manager of Jacobsen's Parts Division. He will have overall responsibility for the development and implementation of parts marketing activity, merchandising, and sales cataloging, as well as planning strategies to satisfy the current and future needs of Jacobsen Parts Division and its customers.

Foote



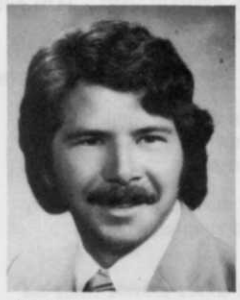
Gaumer

Neil Strong has been promoted to manager, Sales Service of the Logistics Department for CIBA-Geigy. He joined CIBA-Geigy as a sales representative in 1970 and was promoted to sales service coordinator in 1973.

The Davey Tree Expert Company has named **George M. Gaumer** as assistant advertising manager. He will be responsible for Davey Tree's national Yellow Page listings and direct mail advertising program. He will also work in developing national and local media advertising and marketing research studies.

Mario D. Federico, president of Firestone Tire and Rubber Company has been appointed to the board of directors of the Musser International Turfgrass Foundation. He expressed deep interest in the goals of the foundation, particularly the aspect of problem solving through grants to exceptional graduate students working for their advanced degrees at turf-oriented universities. Other recent appointments to the board are **John J. Weinberg** of South Africa and **J. Nakatsukasa** of Tokyo, Japan. Weinberg deals in building and hardware and in professional turfgrass machinery. Nakatsukasa is managing director of the Mikuni Shoko Co. Ltd. His firm represents several well-known American and U.K. firms which deal in irrigation and turfgrass equipment.

Gray



Hurley

Pinnow

Lofts Pedigreed Seed has announced the appointment of **Richard H. Hurley** as Director of Research and Development. He will be in charge of Lofts research and development of all new varieties and will be Lofts' contact with universities. He is a member of the American Society of Agronomy, the Crop Science Society of America, the Weed Science Society of America, and the Golf Course Superintendents Association of America, as well as many other organizations.

Kitten & Bear Chemicals, St. Louis pesticide formulator, has announced the company's new marketing organization. Area sales representatives are: **Warren Rickards**, New England; **Jim Harris**, Carolinas, Georgia, Florida; **David Cline**, Alabama, Mississippi, Tennessee; **Kerry Rothstein**, Michigan, Indiana, Ohio, W. Virginia, Kentucky; **Bern Karsch**, New York, New Jersey; **Randy Butcher**, Texas, Arkansas, Oklahoma; **John Martin**, Texas; **David Lester**, California, Arizona, Nevada; and **Ray Schroeder**, Special Pest Control Industry Representative.

John R. Froines is the new director of OSHA's office of Toxic Substances. As the first director of this office, Dr. Froines has primary responsibility for assuring that applicable standards are developed to protect workers against toxic substances found in the workplace. Prior to this appointment, he was head of the Vermont Health Department's Division of Occupation Health, and has lectured extensively on epidemiology and occupational health.

Dick Gray has been promoted to executive technical representative of the ProTurf Division of O. M. Scott & Sons. He has been a ProTurf technical representative for four years and handles sales in central Indiana. Prior to joining ProTurf, Gray was the superintendent at Crooked Stick Country Club in Carmel, Indiana.

PMC Corporation's Agricultural Chemical Group has announced a number of changes within the northeast department. **James J. Rife** has been named area manager for Indiana and Michigan. **Steve M. Barry** has joined the department as a sales representative in Virginia, and **Neil DeStefano** will assume sales responsibilities for the eastern part of New York. FMC is headquartered in Chicago.

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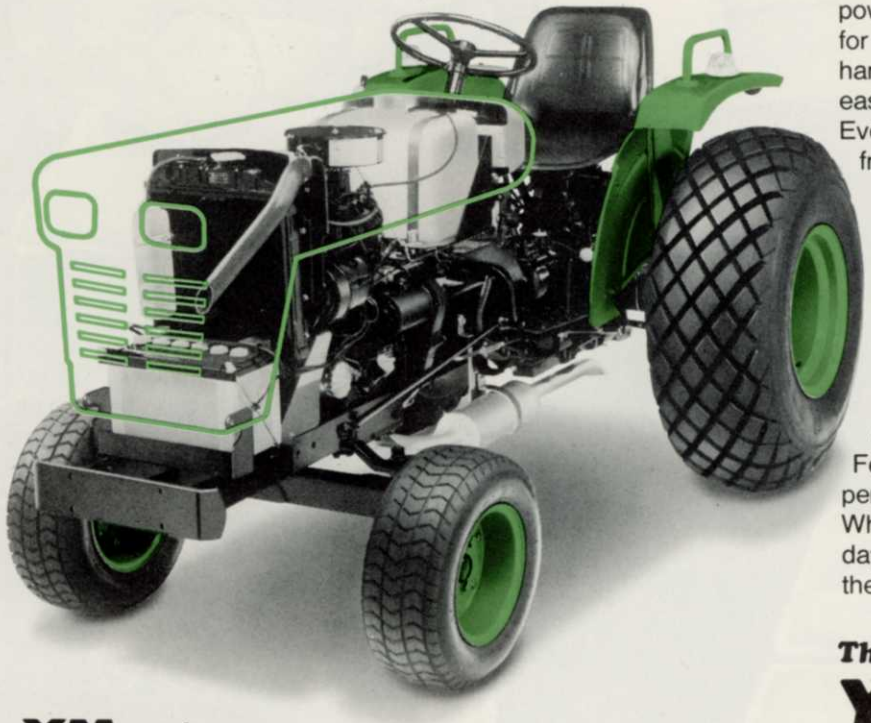

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REVEGETATION

Putting the Puzzle Back Together

Revegetation is more than putting the pieces of a puzzle back together. In the case of strip mining, land can rarely be restored to its original state. It is a compromise based on the extreme need for energy in the United States today.

Reclamation of surface mined land is not new, but the number of acres entailed, their location, and how the spoils affect revegetation efforts are.

In North Dakota an estimated 20,000 acres per year will be disturbed by surface mining. It is predicted that more than a tenth of western North Dakota will be mined. Most of this land (50-60 percent) is now used as range for cattle, vegetation consisting primarily of cool and warm season grasses.

The states of Montana, Wyoming, New Mexico and North Dakota have become the preferred areas for strip mining because coal is in thick veins not far from the surface, the coal is relatively low in sulfur, there are fewer natural and man-made obstacles, and fewer people are affected. Data from the Department of Interior show a savings of 30-50 percent over eastern strip mining.

These western states have written laws to prevent abuse of natural resources by mining companies. Regulations in general require that the productivity of the land be restored , the contour of the land be preserved, and erosion and water pollution avoided. It is not known at this time whether these requirements can be met. Research has been taking place since 1970 to determine this.

Perhaps most perplexing at this point is the difference how mine spoils respond to revegetation efforts in the west as opposed to in the Appalachians and the midwest. The extra pressure from regulations is forcing mining companies to develop permanent, not just temporary, measures for revegetation.

The grasses present in the west apparently cannot get reestablished by mere chemical alteration of spoils. Research is showing that a layer of soil must be placed over the spoils to provide adequate water absorption (infiltration), prevent salty spoils from sealing out moisture, and to avoid runoff problems. Limited rainfall, roughly 15 to 20 inches per year, with little in summer months, may create the need for irrigation for the first two to five years after reseeding.

Surface soil must be stockpiled during mining operations and replaced over spoils after the coal is removed. Continuous fertilization is required due to a general lack of phosphorus and nitrogen in range soil. In the east, woody material cleared during mining could be chipped into a suitable mulch. Very little woody material is available in the west and soil is the only mulch available.

Researchers have been experimenting with different depths of soil over spoils. Optimum depth seems to be in the neighborhood of 30 inches. However, with time the high salt content of the spoils appears to migrate upward into the soil layer making water uptake by roots difficult.

Gypsum has been mixed with both spoils and soil to reduce the sodium content. Leaching the sodium out by natural rainfall is unlikely and leaching by irrigation is expensive.

Reclamation and revegetation consequently have become major cost considerations of mining firms in the west. Years of time and hundreds of dollars per acre are required to do the job properly.

History of U.S. Revegetation Efforts

The Forest Service was the first Federal agency to perform research into reclamation of surface-mined land in the 30s. Initial research centered around reforestation of spoils in southeastern Ohio. Most revegetation theories today stem from this research.

Following World War II surface mining increased in the midwest. It was then discovered that similar revegetation techniques could not be applied with consistent results throughout the U.S. Regional differences in weather, topography, geology, geography, and laws made alterations necessary.

Appalachian mining efforts brought new insight into erosion and runoff. Spoils there tended to be more acid than in the midwest.

In the 60s interest grew in the west toward surface mining. Today surface mining of coal in western states doubles nearly every year. Whereas in 1947 only ten percent of coal mined came from surface mines, today the figure approaches 50 percent. Furthermore, the National Energy Progam, still under consideration in Congress, calls for an additional one billion tons of coal production per year by 1985.

Certainly surface mining will play a greater and greater role in energy production in the near future.

Revegetation Technology

Research on revegetation in western states has centered around reclaiming spoils, thickness of soil above spoils, moisture holding characteristics, soil chemistry and fertility, and irrigation.

The original hope of mining companies was that spoils could be restored by amendments, leaching, and fertilizer. Gypsum was the primary amendment tested. Gypsum (calcium sulfate) was applied at 20 tons per acre to replace exchangable sodium with calcium. High exchangeable sodium reduces the infiltration rate of spoils. The effect of high exchangeable sodium is lessened in sandy soil or soil with high organic matter content. Results showed that gypsum treatment reduced the exchangeable sodium content 30-50 percent in the top foot of spoils after three years.

Leaching in the west is difficult due to a lack of rainfall. Leaching is used to reduce the content of soluble salts and exchangeable sodium in the root zone. Soluble salts increase the osmotic potential of the soil layer making it more difficult for the plant to extract moisture from the soil.

Almost all spoils in the west lack adequate phosphorus and nitrogen. Potassium and minor element levels appear to be sufficient. Annual fertilization of nitrogen and phosphorus is necessary to revegetate most western mine areas.

Despite all their efforts, researchers found the sodium problem too great for gypsum to correct. The only effective way they found to correct the problem was to use more soluble calcium salts such as calcium chloride and calcium nitrate. However, these solutions require leaching out and are too expensive for large scale use. Costs for calcium chloride treatment would run $1,300 per foot per acre.

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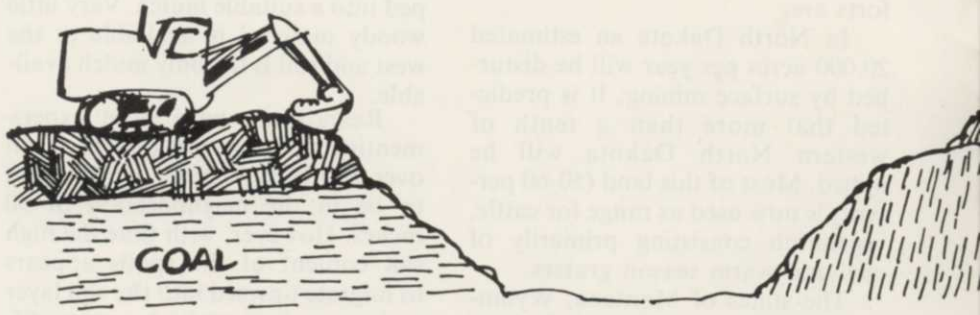
LAWN CARE INDUSTRY



Consequently, tests have shown that chemical reclamation of strip mine spoils is not practical in large scale. A more practical method of reclamation is to apply a layer of soil over the spoils.

The Northern Great Plains Research Center, Mandan, ND, is the source of most information regarding soil thickness over spoils. Dramatic improvements in erosion control, infiltration, and plant growth have been found with as little as two inches of topsoil over spoils. Mixing topsoil with the top few inches of spoils proved less effective.

The center tested thicknesses of soil over spoils from 2-100 inches. Results show a topsoil depth of 8 inches, and a total soil depth of 28 inches, to provide the most efficient improvement. This combination provided the maximum yield per acre of spring wheat. Mixing the topsoil into the subsoil considerably reduced the benefit of the topsoil.

Research has not conclusively determined the relationship between soil thickness and the upward migration of sodium into the soil layer. Two-year studies have shown that sodium does migrate upward but that this migration is largely restricted to the first four inches above spoils.

Moisture retention and erosion are directly related. The more moisture taken into the soil the less there is to erode poorly compacted soil or spoils. Western precipitation characteristics cause a new twist to infiltration and erosion problems. Most of the approximately 15 to 20 inches of precipitation falls during the growing season when temperatures are high and evaporation potential is highest. Most of this rain takes place during storms, each storm producing less than ½-inch of rain in a 24-hour period. Consequently, very little moisture is retained in the root zone between rainfalls. Vegetation can get established on undisturbed land during normal rainfall conditions. In periods of less than normal precipitation new seedlings often suffer water stress and fail. Also, precipitation is insufficient to leach sodium, salts, and other undesirable chemicals beneath the root zone.

Irrigation is a way to overcome a number of moisture problems of mine spoils. However, researchers have discovered that changes from standard agricultural irrigation practices are needed. Too much water can have the same effect as too little. A change from normal precipitation patterns can also influence the types of vegetation established. If irrigation is used only to establish normal range vegetation and then stopped, then it must be used in such a way to insure standard moisture conditions and not to create artificial ones.

In irrigation for establishment less water is needed therefore water of lower quality can be used. A number of universities are studying the use of effluent for irrigation on spoils.

Conclusion

The demand for coal for energy is enormous. The desire to mine coal in western states is just as great. However, most of the research needed to guarantee the proper re-establishment of natural vegetation is incomplete. Political and economic pressure could easily overpower the need for delay for more complete data. State laws set standards which aren't clearly understood, such as the degree of restoration of vegetation or for what period of time. The United States Department of Agriculture is performing most of the research with cooperation from mining companies.

Irrigation studies are incomplete, sodium uptake studies are incomplete, soil thickness studies are incomplete, as are other studies. It almost seems that the research has raised more questions than it has answered.

Any national policy for expansion of coal production must also include provisions for support of research to answer important questions as soon as possible. An energy program must not neglect the residual effects of production. *Bruce F. Shank, Editor.*

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Southern Oak Wilt Linked to Fungus

by Jim Crowley

A healthy oak.

Oak with root damage from road construction.

A microscopic fungus is slowly destroying oaks in southern United States. Often confused with natural decline, the fungus causes a slow thinning and eventual death of oaks and other tree varieties.

Texas A&M University Professor of Plant Sciences, Dr. Eugene Van Arsdel, is experimenting with a systemic fungicide to stop oak decline on the university campus. The fungus, Cephalosporium, can kill a full-grown tree within 10 to 20 years.

The fungus also causes persimmon wilt and has infected varieties of elm, soapberry, pecan, hackberry, and mulberry. Because the fungus thrives in the summer heat of the South, oak decline is more serious in the southern United States than the faster killing oak-wilt fungus, which has trouble surviving the heat.

The wilt is difficult for the layman to spot, but trained personnel can get a general idea of a tree's condition by observing. Oak decline is usually suspected when there is a thinning of the oak's crown. As the fungus grows, the vessels are blocked preventing water transport within the tree. The leaves die back leaving exposed limbs in the crown. This "fingering" of the crown is often the first and only visual symptom of oak decline. Occasionally, the leaves of an infected tree are smaller than normal leaves. The only positive identification of

Oak in advanced stage of decline (left) and second one showing characteristic resprouting from main truck and branches midway in decline.

the fungus is its cultivation in the laboratory from a wood sample.

The prognosis is usually death of the tree within 20 years.

"There's no good answer concerning the time before an infected tree will die. Often it's only four years for a fungi-infected sycamore, while some oaks may survive for 20 years. Sometimes the host can hold out, while nearby oaks may die rapidly," said Van Arsdel. "Usually the tree will die so slowly that most people don't notice it. They think it's natural."

The disease is as difficult to control as it is to diagnose. Because the fungus spreads throughout the tree one must use systemic fungicides to treat the disease.

Since the fungus can travel from one tree to another through the often-present common root networks that are under stands of oak, the disease can rapidly spread from one tree to others in the same area. Two methods are suggested by Van Arsdel to slow or eliminate the disease's spread. First, when planting a

An infected live oak in less advanced state of decline with fingering in crown.

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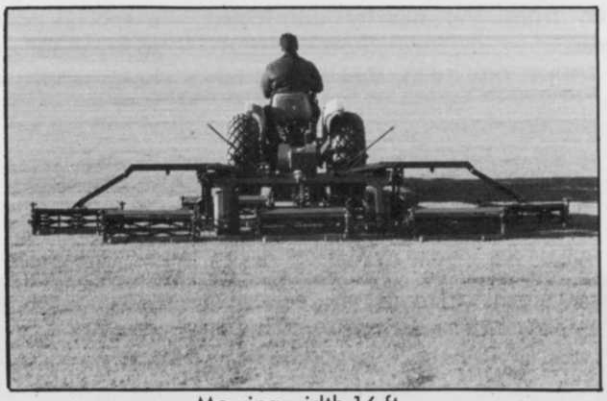
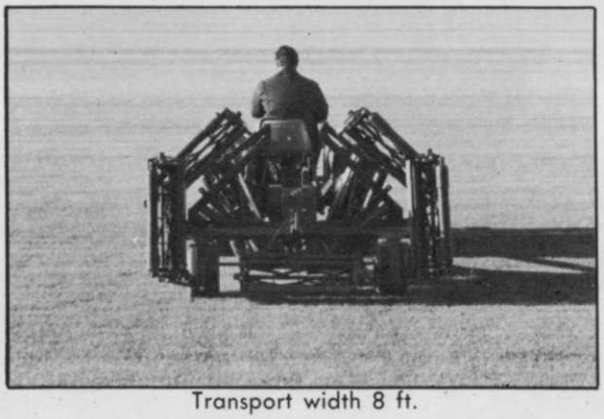


Mowing width 16 ft.



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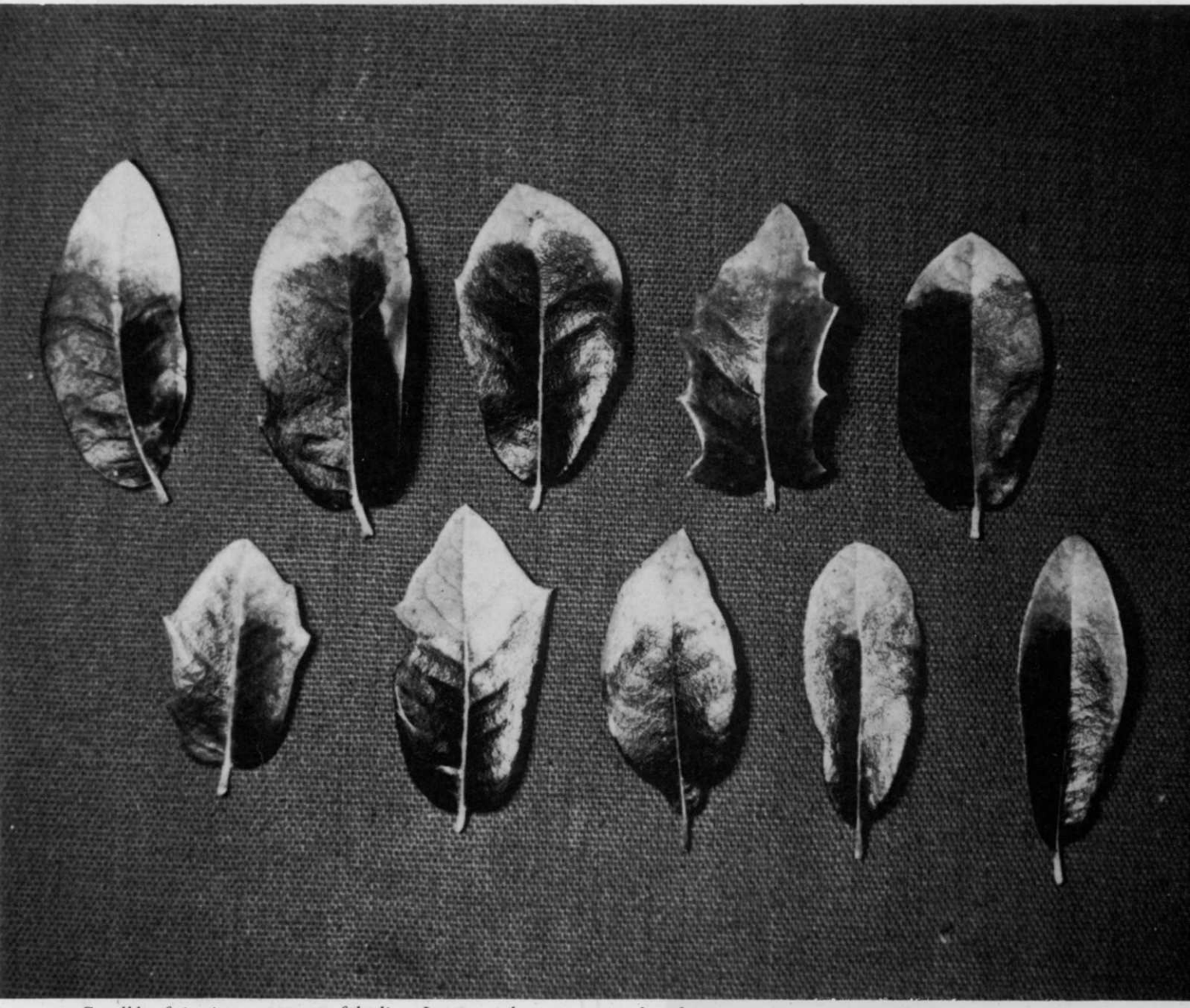
large number of trees, such as a golf course, mix species of trees. This diminishes the chance of natural root grafting and the spread of the disease. Second, when treating an individual tree, cut the root grafts by ditching. This separates the infected tree from the nearby uninfected trees.

Since July 1970, Van Arsdel has been treating many of the Texas A&M campus oaks for oak decline. Treatment has been centered around the experimental application of two benzimidazole compounds to the base and foliage of the infected trees. This research has shown that a systemic fungicide, benomyl, is relatively effective against the fungus.

Currently, the use of benomyl in a special penetrating agent (DMF) to treat fungal oak decline has not been approved by the Environmental Protection Agency (EPA) although the chemical has been approved for treating other tree diseases. The EPA has yet to allow the listing of benomyl in DMF as an effective treatment, but Van Arsdel is slowly working toward full EPA acceptance. He hopes for at least a listing of the benomyl in the penetrating agent as an approved treatment in the near future.

The Texas A&M researcher has established through clinical tests



Small leaf size is a symptom of decline. Leaves on bottom were taken from untreated infected tree. Top leaves, slightly larger came from treated tree.

that the benomyl-DMF combination has a very low toxicity. In fact, much lower than many currently used insecticides. But he believes the reason for slow acceptance is connected to the possibility that an applicator would mix a highly toxic insecticide, such as parathion, with the benomyl-DMF combo. Since the fungicide treatment requires the penetrating agent, any contact with the operator would produce poisoning and possibly death if a toxic insecticide were mixed in. Benomyl and the penetrating agent alone are relatively safe to use, according to Van Arsdel.

Using the campus trees, Van Arsdel has established two methods of treatment for diseased trees. The drenching of the tree base every few years produces good results. The other method of treatment is the application of a foliage spray to the tree's crown. While the foliage spray will not cause a complete remission it does slow the progress of the disease. A combination of both treatments provides the best results. Van Arsdel judges the success of his

Decline spreads through entertwined root systems as in this clump of post oaks.

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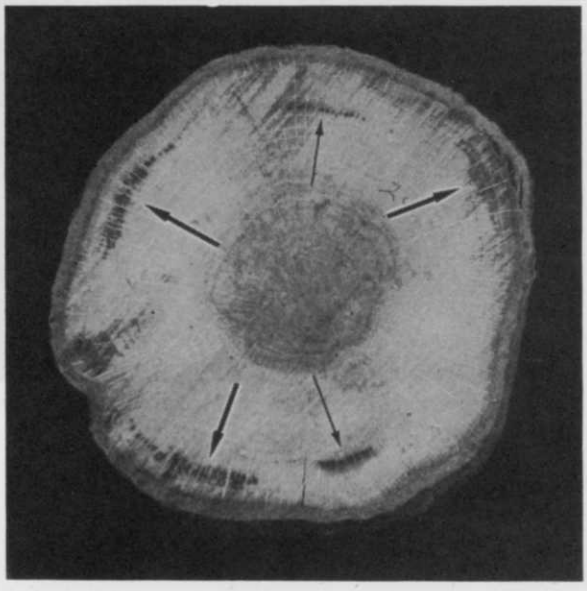
treatments by the increased leaf size the following spring. The increase in leaf size is the first sign of successful treatment. The treatments are applied during the summer which has been found the ideal time to apply the systemic fungicides.

Approximately 200 oaks are being treated and observed on the College Station campus. Many of the trees display small signs stapled to their bases indicating the research project. Van Arsdel placed the signs to discourage any human-caused damage to the trees. Unfortunately the past few years have seen a large number of construction programs on the campus. While most trees survived the contractor damage, several could not be saved.



Crosssection of tree shows streaks caused by fungus (heavy arrows). Light arrows indicate streaks caused by ambrosia beetle.

These construction-damaged trees display another form of decline. Damage caused by contractors cutting the roots produce a similar appearance in the crown growth and adds to the chance of fungal infection. Van Arsdel has discovered that several varieties of wood-boring insects attack the damaged parts of the tree. These insects then infect the tree with the Cephalosporium fungus which they serve as vectors.

"A live oak is mainly of value as an ornamental tree and I think that's actually a much higher value than lumber because the oak is in someone's front yard who loves it," said Van Arsdel, referring to the economic and sentimental damage caused by oak decline. While a 24-inch diameter oak may be worth several thousand dollars, a tree's beauty and grandeur are priceless.

GCSAA 49th International Turfgrass CONFERENCE AND SHOW

February 12-17, 1978 — San Antonio, Texas

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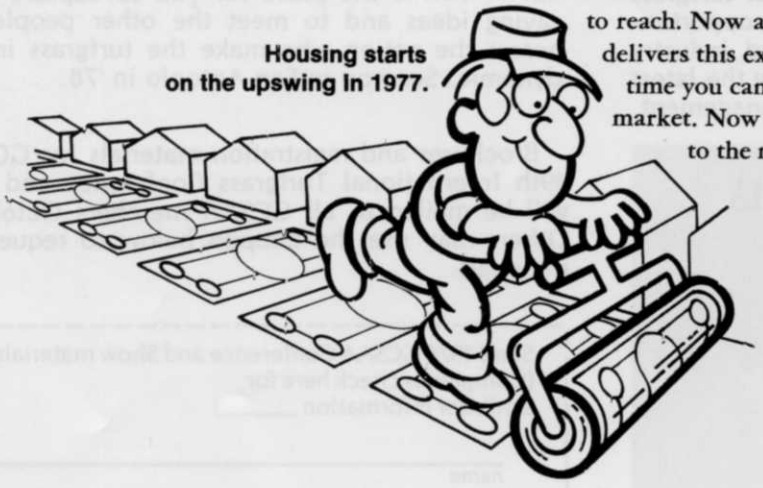

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Preventing Injury to Frosted or Frozen Turf

by John F. Shoulders
Extension Specialist, Turf
Virginia Polytechnic Institute
Blacksburg, Va.

Each fall turf superintendents are faced with the problem of how to protect fine turf areas such as putting greens, athletic fields, fairways and lawns from frost injury. Later in the season the problem expands to include the management of turf areas while they are frozen and also during freezing and thawing.

Any traffic on turf while frost is present results in injury to the turf. For example, walking across a frosty putting green results in the death of the grass blades in the footprints. The same is true for a vehicle driven over frosted turf. There is usually little or no damage to the crown or roots.

Any traffic on frosted turf causes injury.

The preferred management practice for frosted turf areas is to prevent all traffic until the frost has melted.

Turning to the management of freezing, frozen or thawing turf areas, it is helpful to keep in mind that the most severe damage from traffic occurs during the freezing and thawing processes. Traffic of any kind should be prevented while either of these processes are taking place. Limited traffic may be permitted under certain conditions when the ground is frozen solid.

While the turf and soil are in the process of freezing, cells are particularly vulnerable to damage from traffic. Areas of turf that would otherwise remain alive have frequently been killed by traffic during the freezing process.

Bentgrass and other species of cool season turf are also vulnerable to injury from traffic during the thawing process. The most

Damage caused by foot traffic across a partially frozen lawn. (Photo courtesy Davey Lawnscape)

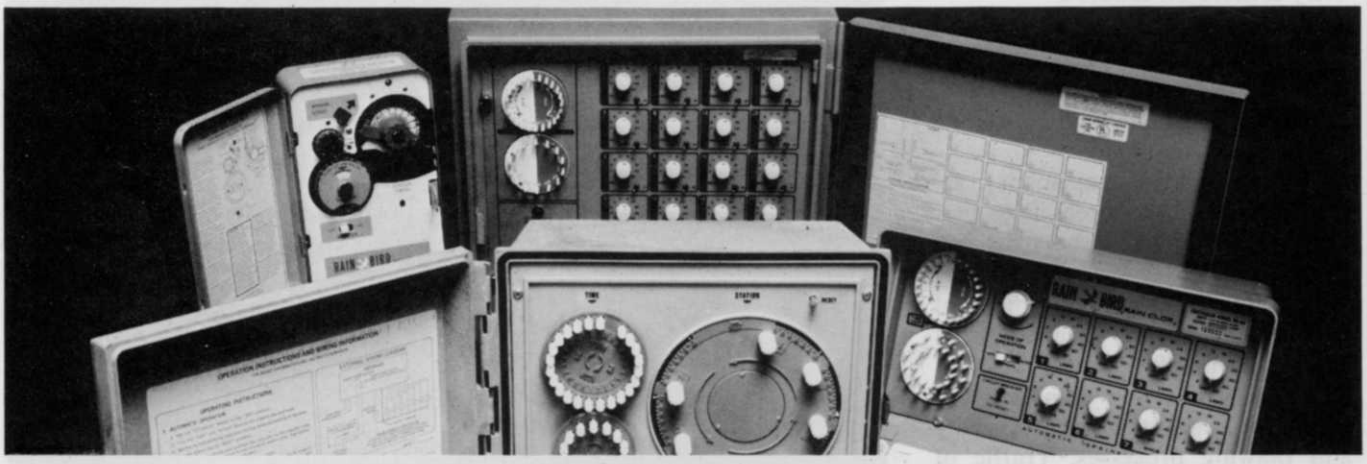
If you leave footprints on turf, further thawing is needed.

Reprinted from the October 1977 issue of Tech Turf Topics, a publication of VPI and the Cooperative Extension Service.

vulnerable time is when the surface of the green has thawed but the soil just underneath the surface of the green remains frozen. This is true from the time the surface of the green begins to thaw and may remain true until the green has thawed to a depth of perhaps 2 to 3 inches. During this period, roots are easily injured by traffic. Furthermore, the frozen portion of the green prevents the internal drainage of moisture, resulting in a condition where the green is too wet for play.

After the turf has frozen solid and enough time has elapsed for the frost and ice to disappear from the surface of the blades and from the cells within the blades, little damage occurs from play so long as the area remains firmly frozen and traffic is limited to individuals walking, running, etc. Golf cars and heavier vehicles should not be permitted on high priority turf areas. While light play can be permitted under these conditions, heavy traffic may result in injury to the blades by abrasive action resulting from crushing the turf between the foot and the firmly frozen surface.

The most pressure to open golf courses and playgrounds usually occurs when the weather moderates following a cold spell and players want to get on the turf before the soil has had an opportunity to thaw deep enough to avoid injury to the turf. Good judgement dictates that the golf courses, playgrounds and similar turf areas should be opened as early as possible under these conditions, but not so soon that the turf is injured. A rule of thumb to consider under these conditions is to permit play if the soil has thawed and dried to the point that the surface of the turf is firm enough to support a person's weight without leaving footprints as he walks across it. When you feel your foot sinking into the soft upper portion of the turf, play should be avoided. □



With Rain Bird® controllers, lush landscapes are just a matter of time.

Our controllers help everything grow greener. Just like clockwork.

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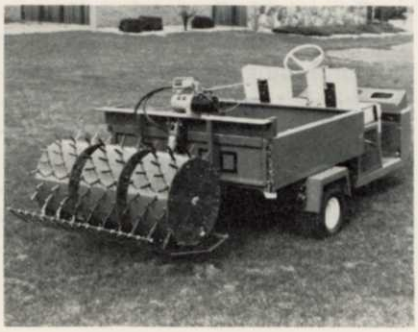
Bringing new ideas to life.

Circle 133 on free information card

Dedoes Aerators Can Be Quickly Mounted To Most Any Type Vehicle

Garden Tractor

The Dedoes new Two-Drum Aerator has 72 pluggers and aerates a 25″ Swath. Mounts to any 10-14-16 H.P. or Larger Garden Vehicle. Includes a self-contained hydraulic unit. *If weight is needed a separate Weight Tray is available.*



Utility Vehicle

Attaching the Dedoes Aerator to your utility vehicle is a simple matter. The Basic Frame Unit allows you to adapt to any equipment in a matter of minutes. *Available with hinged doors and removable sides. Collects plugs internally.*

Specialty Equipment

Even a vehicle built for specific use, can be used with the Dedoes aerator to give quick, neat aeration for small areas.

The complete Aerator that offers speed and quality in addition to the following:

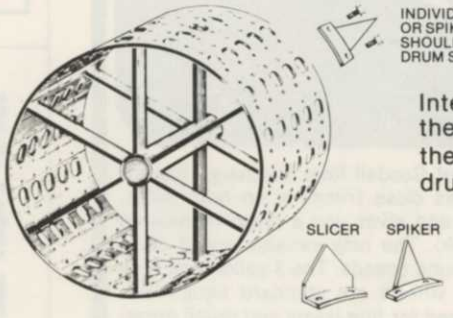
- 3″ Tine in 3/8, 1/2, or 3/4 diameter.
- Pivoting Tine gives you a clean hole.
- Hydraulic principle utilizes weight of vehicle for down pressure.
- TCA551 Model gives you close to 2″ Tine spacing.

New Items Now In Production

Pointed Tine

Dedoes now has a pointed tine available for tees and greens which gives up to 3″ penetration in the turf.

Separate Slicers and Spikers



Interchangeable with the tines on the Regular Dedoes drums.

Manufactured by

Dedoes Industries, Inc.

1060 West Maple Road, Walled Lake, Michigan 48088
(313) 624-7710

CLCA seeks help with educational programs

The Education Coordination Committee of the California Landscape Contractors Association is seeking greater participation from other segments of the horticulture industry to help with on-going programs and provide fresh ideas for new programs.

The committee, formed five years ago by its chairman, Corte Madera landscape contractor Frank Peccorini, has included nurserymen, golf course superintendents, flower growers, maintenance contractors and suppliers and educators for the purpose of organizing and coordinating community college ornamental horticultural programs.

The committee has been successful in organizing better student programs, according to Peccorini. A system of accreditation of college programs has also been developed with several colleges accredited and more requests pending.

Peccorini indicated that the committee also concerns itself with the continuing education of industry people through statewide seminars. The committee was also responsible for obtaining state funding for a free industry placement bureau, currently located at Butte College.

Tree course offered in California

A course in small tree farm management is being offered as part of the continuing education program of University Extension, University of California. Peter C. Passof, forest advisor, Mendocino Cooperative Extension, Ukiah, will be conducting the course. It will focus on the more important elements of small tree farm management for those who are unfamiliar with basic forestry principles.

The course covers growth; practical ecology; silviculture; protection against forest pests; forest economics and marketing opportunities; regulations; future forestry practices, and multiple-use management concepts. Participants will learn how to get professional forestry assistance from the public and private sectors, and how to increase revenues by marketing a wide range of forest products.

Enrollment is requested by February 17. For more information contact Catherine Baker in the News Service Department, University Extension, University of California, Davis, Calif., 95616.

GOODALL

The Goodall Fillies

Introducing the 36 inch cut Goodall Rear Discharge mower. A new design deck allows close trimming on both sides, helps prevent windrows and gives you a clean manicured cut (not that just-cut look). The new variable speed drive gives a wider range of ground speeds. The 3 gallon fuel tank and Hi-Way front caster wheels are standard equipment. This new mower is designed for fine lawns and rough areas. The finger tip control gives the same easy handling and hillside stability and maneuverability as the other Goodall Self-Propelled models. Also available is a new 52 inch rear discharge mower.

Goodall Div. • 1405 Bunton Road • Louisville, Kentucky 40213
Phone 502/459-3811 Telex 204-340

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NEW! AQUAPROBE

Sub-Soil Moisture Tester

AQUAPROBE takes the guesswork out of soil moisture testing. Scientifically measures moisture at depths from 2 to 26 inches. No digging; no fixed point of measurement. Amazingly light-weight, portable and easy to use. Aquaprobe is low in cost, too. Write:

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Oneida, N.Y. 13421

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We prepare you to cash in on countless money-making opportunities in modern landscaping and show you how, by easy steps, to start your own business part or full time. You will learn latest developments in Modern Landscaping, including creative design—plant propagation—revolutionary new methods of growing in manufactured soils—practical soil testing—growth regulators—the low down on fertilizers—easy ways of plant identification—estimating and contracting. My unique home study course features easy to understand assignments with careful detailed illustrations. Certificate Awarded. May. I send FREE, and without obligation, my informative BOOKLET?

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For ad on following page circle 112 on free information card

As you approach 1978, it's time to reassess your company's or department's financial picture. Because if you have additional 1977 budget dollars, now is the time to consider adding to your fleet of Ditch Witch underground construction equipment. You'll get a financial bonus in 1977 that will pay off in production return in 1978 and in all the years to come.

By acting now, you can take advantage of an investment tax credit available if you purchase during this calendar year . . . an income tax credit that reduces your income tax liability, dollar for dollar. You'll also be entitled to a 20% first year depreciation allowance in addition to normal depreciation.

And best of all, your budget bonus for '77 will pay off for you again and again tomorrow.

So why wait until '78? Talk to your Ditch Witch dealer now. Or call (800)654-6481. Let us explain why buying Ditch Witch equipment can be an added bonus. Not only when it comes to budgets and taxes, but when it comes to increased productivity and profits, too. Charles Machine Works, Inc., P.O. Box 66, Perry, Oklahoma 73077. TWX 910-830-6580.

Turn this year's budget bonus into next year's equipment payoff.

DITCH WITCH®

DITCH WITCH® HAS THE ANSWER!

"Without Laval Separators, we couldn't have opened for the winter season."

-Arthur R. Weaver, P. E.
Perini Land & Development Company
West Palm Beach, Florida

"We were nearly finished with the North Course at the President Country Club. It was critical that we grass immediately to insure play by the coming winter season.

"But we had trouble with sand in our wells. So much sand was entering the electric solenoid control valve that our irrigation system wouldn't function.

"We called on the Laval Separator distributor in our area. They installed two six-inch 600 gpm industrial separators.

"The separators did their job. In fact they did so well, we even bought two more for our South Course. And we've had no further sand problems."

Laval Separators, from 3-4100 gpm, will remove up to 98% of all particles as small as 200 mesh (74 microns). If you've got a problem with sand, call on Laval.

For more information write: Laval Separator Corp., 1911 N. Helm, P.O. Box 6119, Fresno, California 93703

Dept. DD3

LAVAL SEPARATOR CORP.

Circle 143 on free information card

Industry News

Bacterial insecticide controls five insects

Bactur, a highly-selective biological insecticide, has been newly registered for use against fall webworms, cankerworms, tent caterpillars, redhumped caterpillars and gypsy moths.

The insecticide contains bacteria *(Bacillus thuringiensis),* that paralyze the insects' stomachs, causing death within 3-5 days after ingesting Bactur-treated foliage.

Because Bactur interferes with a fundamental biological function, insects do not develop resistance to it. Bactur also controls target pests without harming humans, beneficial nontarget insects, livestock, fish or wildlife. It can be applied in liquid or wettable powder forms and is marketed by Thompson-Hayward Chemical Company.

EPA halts DBCP sales

Sales and use of DBCP (dibromochoropropane) have been halted by EPA administrator Douglas M. Costle. DBCP has been used as a soil fumigant since 1955 and is now suspected of being a human cancer agent based upon stomach and mammary tumors found in laboratory rats and mice, according to Costle. DBCP is believed responsible for causing sterility or reduced sperm levels among more than 100 workers producing the pesticide in four states.

Dow Chemical and Shell Chemical, the principle manufacturers, voluntarily stopped production last summer. Despite the halt, other firms may still have some of the compound on hand. The EPA order would prohibit any future sale in the U.S. unless safeguards are met.

Costle declared that he would lift the "suspension order" for uses of DBCP such as treatments of home lawns and golf courses, if the makers will agree to change the labels of their products to restrict use only to trained applicators "wearing protective clothing and respirators." Ignoring the safeguards would be a violation of the 1972 Federal pesticides law, he warned.

NAPB releases Regal perennial ryegrass

Regal perennial ryegrass, a new turf-type variety from North American Plant Breeders (NABP) reportedly offers improved rust resistance, cuts cleanly and is said to be a darker green color than the other turf-type ryegrasses.

Regal offers the fast germination and rapid establishment characteristic of the perennial ryegrasses, and forms a thick turf which holds up very well to severe wear and tear. After establishment, however, it appears to grow more slowly than other ryegrasses. This can mean less frequent mowing.

Considering wood & brush chippers

Are you getting everything you should ?

Ask the ones who **use** them ! !

Free! Write for the new illustrated Whisper Chipper brochure.

ASPLUNDH

Asplundh Tree Expert Co.
Manufacturing Division
Chalfont, Pa. 18914
215-822-0542

Circle 130 on free information card

OHIO TURFGRASS Conference & Show

Dayton Convention
and Exposition Center
December 6-8, 1977

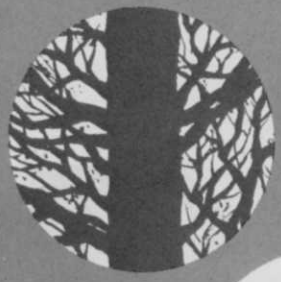
- 12 UNIVERSITY TURF SPECIALISTS
- GOLF COURSE SESSIONS
- GENERAL TURF SESSIONS
- PROFESSIONAL LAWN SERVICE SESSIONS

- OVER 50 MAJOR EXHIBITORS
- OVER 120 EXHIBIT SPACES
- ANNUAL BANQUET
- LADIES PROGRAM

The Ohio Turfgrass Conference and Show is a regional event serving midAmerica. Educational sessions and exhibits are planned specifically for the commercial turfgrass industry — golf courses, golf associations, parks, recreation areas, cemeteries, nurseries, landscape contractors, sod growers, firms, clubs, corporations, and related organizations. Anyone concerned with commercial turfgrass care in any way is welcome and will benefit from this program.

Write or Call:
Dr. Dave Martin
OHIO STATE UNIVERSITY
1827 Neil Ave.
Columbus, Ohio 43210
Tel. (614) 422-2591

SPONSORED BY:
OHIO TURFGRASS FOUNDATION
OHIO COOPERATIVE EXTENSION SERVICE



TOUGH RUGGED HARDWARE for TOUGH RUGGED HARDWOOD

Durability in hardware and confidence in tested products are top priorities for you and the linemen you equip.

Safety Test, Inc., manufacturers and distributors of tree trimming and lineman's equipment, has the tools and accessories that your men have confidence in . . . safety tested products of proven durability. Tough tools! Sturdy, practical accessories! Everything they need for a good job done fast. In anybody's book, that saves money!

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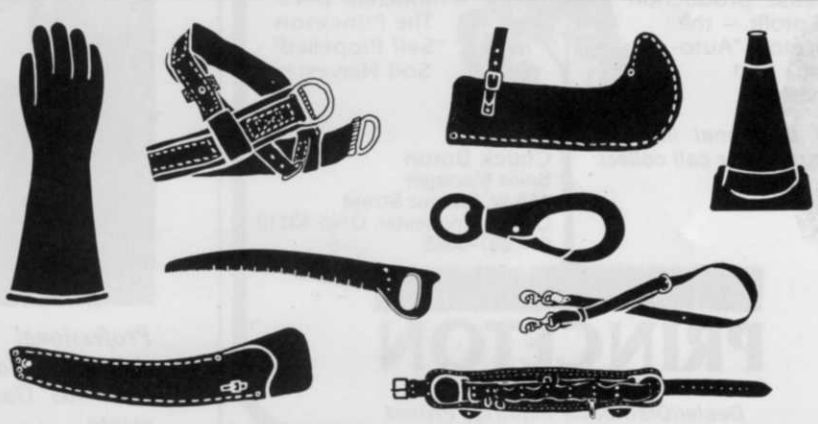
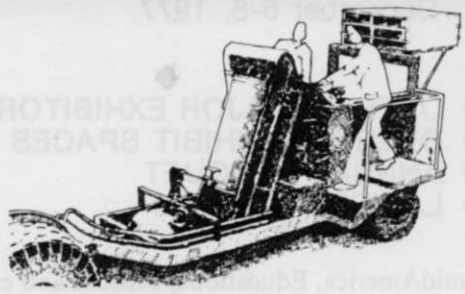


SAFETY TEST, INC.

Manufacturers of
Tree Trimming and
Lineman's Equipment
Drawer 400, Shelby, N.C. 28150
704/432-7346

In 2 Minutes... You're Hooked with a "Tow-Boy" Sod Harvester



$12,500 00 FOB

Operating behind any adequately sized, low speed tractor, the Princeton "Tow-Boy" allows complete flexibility in the use of your power supply...because of its exclusive "2 minute hook-up" capability. Harvest in the morning, mow, seed, and spray in the afternoon.

Save time, money and man hours. Increase production! No large field crew needed. Harvest over 2,000 sq. yds. of sod per hour with three-man crew. All sod is cut, palletized and ready to ship.

Perfect for smaller volume sod producer. Now, **you** can enjoy the high production and labor saving features of the larger Princeton harvesters...at one-third the cost. Ask for the "Tow-Boy" by Princeton.

There's a Princeton for Everyone.

AUTOMATIC

The only sod harvester that does it all...with just one man! Cuts, aerates, crosstie stacks, and palletizes 27,000 sq. ft. of sod per hour with a crew of one. Save time, money, and man hours. For the large volume sod producer who wants to increase production **and** profit – the Princeton "Automatic" Sod Harvester.

SELF-PROPELLED

Increase your profits...by reducing costs and increasing production. Three man crew can harvest 22,500 sq. ft. of sod per hour. For the medium to large volume sod producer who wants quality, high production and low maintenance at a moderate price. The Princeton "Self Propelled" Sod Harvester.

For additional information, write or call collect:

Chuck Braun
Sales Manager
955 W. Walnut Street
Canal Winchester, Ohio 43110
614/837-9096

PRINCETON
MANUFACTURING COMPANY
Dealer/Distributor inquiries invited

Circle 115 on free information card

Lennertz PGMS head

Fred A. Lennertz, Jr. was elected president of the Professional Grounds Management Society at its annual meeting in Houston this month.

Lennertz served as vice president this past year and is superintendent of grounds and transportation for Indiana University — Purdue University at Indianapolis.

Chosen vice president was Anne O. Seaman, who is retired from the New York Botanical Garden. Chosen treasurer was John R. Van Vorst, who is supervisor of parks for the city of Tenafly, N.J.

Over 150 professional grounds managers attended the six-day meeting at Stouffer's Greenway Plaza Hotel. Speakers included Dr. James B. Beard, turf professor at Texas A & M university; Russell Studebaker, horticulturist for the city of Tulsa, Okla.; Warren Purdy, cost control consultant for the green industry; and Fred Klatt, professor of landscape architecture at Texas A & M University.

Professional Grounds Management Society delegates visited the Bayou Bend Estate in Houston. Leading the tour was Gary Outen director of horticulture for the estate.

Gordon Leishman measures the extra growth after using Jobe's Evergreen Spikes.

"My trees doubled the growth rate after I used Jobe's Spikes."

Gordon Leishman of Idle Hour Country Club, Lexington, Ky., is enthusiastic about the results he achieves after using Jobe's Spikes. Trees added four inches more growth than he expected. He used Jobe's 12-6-8 Evergreen Spikes in the fall of 1975 to help trees winter over, develop strong root systems and provide a reservoir of nutrients for spring growth. And he's been using Jobe's Spikes ever since.

Jobe's Spikes get right to the root of your professional tree care needs.

In every type of climate . . . every kind of soil from sand to heavy clay, Jobe's Spikes have proved their effectiveness.

University studies have shown that Jobe's Spikes are better than surface-applied fertilizer. And there's no danger of burning turf or excessive leaching.

Jobe's patented binder forms the fertilizer into easy-to-drive spikes and provides for uniform release of nutrients. A plastic cap is included to make driving Spikes easier and to protect the Spike while you drive it. The analysis of Jobe's Tree and Shrub Spikes is 16-8-8. Evergreen Spikes are 12-6-8. Fruit Tree Spikes are 5-15-15. Rainwater or soil moisture carries the fertilizer down to the root zone.

Call your local Jobe's distributor or order direct. $30 per case (105 Spikes) prepaid, 5 case minimum. 15 or more cases, $25 per case. 36 or more cases, $22.50 per case.

Jobe's®
TREE & SHRUB SPIKES

The easy method for professional tree care. International Spike, Inc., 1081 Dove Run Road, Lexington, Kentucky 40502

New Products

Kershaw Manufacturing has introduced the **Fence Row Trimmer** attachment for their Klearway heavy duty brush and timber clearing machine. A flail-type, rotary drum cutter, the Trimmer is capable of cutting and mulching material four inches in diameter.

For use, the Klearway operator hydraulically positions the four-foot-wide Trimmer outward from within the cab. It features a full range of operational cutting heights from four to seven feet above ground with the trimmer level. Cutting outside of this range, up to 15.5 feet high, can be attained with the trimmer cutting at an angle. Trimming at the 15.5 feet reach, the Trimmer head is perpendicular to the ground enabling "trimming back" of tall material which may be extending into the right-of-way from beyond the fence.

The Trimmer may be ordered as an option for new Klearways or as an attachment easily fitted to any existing Klearway.

Circle 701 on free information card

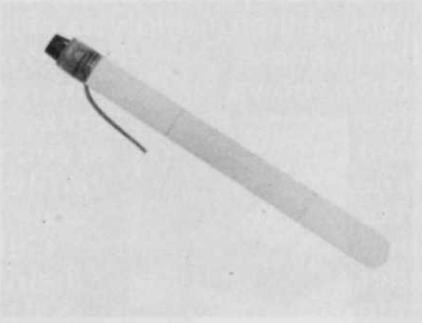
A new line of **flail choppers** produced in Holland by Van Wamel B. V. of Beneden-Leewen, the Netherlands, is available for distribution throughout North America.

Seven models are available under the "Perfect" trade name. The principle feature is a vibration-free flail rotor with heavy-duty, long-life flails. The rotor is suspended in self-adjustable bearings for intensive work and operates at a speed of 1900 RPM at 540 RPM of power take-off. Two of the models have eight flails each, two others have 12 flails each, and one model has 16 flails. Made of manganese steel, these flails are mounted in replaceable steel bushings with 20 mm. hardened steel bolts and locking nuts.

The chopper can be coupled to a three-point hitch on any type of tractor. The drive is through the oil bath gearbox with spiral teeth gears and V-belts having a spring-loaded automatic belt tensioner. Depending on the application, the power can vary between 28 and 60 h.p.

The machines are marketed in four models with operating widths of 110 to 220 centimeters for work directly in the center behind the tractor. In addition, three other models can operate in areas of 150 to 220 centimeters wide in central or off-center positions with respect to the tractor. The weights of the different models range from 850 to 1720 pounds.

Circle 702 on free information card



Hydrovisors, from Hydra Terra Corp., are solid state root tension sensors with a valve controller added. Added to any clock controller using electric valves that operate with 24 to 30 volts AC power, they sense when to irrigate. They may save as much as 50% by preventing irrigation when root stress is low, but allowing irrigation when the root tension is above 20 to 30 centibars.

The Hydrovisor is simple to install by wiring in series with the existing valve wires. They work in any type of soil, and one Hydrovisor can supervise up to three valves at a time.

Circle 703 on free information card

Startex Corp. has introduced **Weather Out**, a system that locks sheets of plastic to offer seasonal climate control of nursery out-buildings. Simple frames or moveable structures permit a flexibility of growing environments that enable the growing plan to be the most profitable at the lowest cost, Startex claims.

Once the locking channel is installed, the plastic sheets can be put into place or removed in a matter of minutes. When the plastic is locked into place, it can't tear or blow away in the highest of winds or roughest of winters. No special tools are required for installation of the system or for placing or removing the plastic.

Circle 704 on free information card

Rhodia Inc. has a new **16-page brochure** on its Visko-Rhap herbicides and invert emulsion spray system. Included in the booklet are an application guide and rates recommended for Rhodia's herbicides in such applications as rights-of-way, roadsides, drainage ditches, lakes, ponds and forest management. Also listed are species of weeds controlled by the herbicides along with directions for proper use.

The brochure includes a detailed check-list for converting a conventional spray system to a Visko-Rhap invert-type system. The heart of this system is a mechanical inverter that provides optimal immersing of oil in water. The resultant spray consists of heavy droplets in spaghetti-like strands that reduce drift.

Circle 705 on free information card

Good things come in small packages.

Whether you purchase seedlings for permanent planting or prefer to grow your own stock for later transplanting, you'll be impressed with our wide variety of fir, pine and spruce seedlings. Northern-grown for hardiness, they've all been personally cared for by the owner to assure that you receive only the very best.

As a businessman, you'll appreciate our dependability almost as much as our reasonable prices.

Write, wire or call us today for complete details and pricing.

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Classifieds

When answering ads where box number only is given, please address as follows: Box number, c/o Weeds Trees and Turf, Dorothy Lowe, Box 6951, Cleveland, Ohio 44101.

Rates: All classifications 65¢ per word. Box number, $1. All classified ads must be received by Publisher the 5th of the month preceding publication date and be accompanied by cash or money order covering full payment. Mail ad copy to: Dorothy Lowe, Weeds, Trees & Turf, P.O. Box 6951, Cleveland, Ohio 44101.

USED EQUIPMENT

2 — 50' AERIAL BASKETS — 65' Aerial basket, 2 Asplundh brush chippers. 1 Vermeer tree mover, 1 Vermeer stump cutter. Small hydraulic crane, 2 John Bean sprayers, ten ton tri-axle trailer, 1 Prentice log loader, tractor with front end loader and Bobcat loader, Parkway Tree Service, 120626 W. Cherry, Wauwatosa, Wis. 414 257-1555.

FOR SALE — Three lawn spray trucks. 1973 IHC w/1000 gallon tank; 1976 GMC w/1000 gallon tank; 1976 GMC w/750 gallon tank and mechanical agitation. All three trucks equipped with Meyers multistaged pumps, hose and hose reel. These trucks are in excellent condition and ready to spray! For details call (217) 529-5692, Blakley Fertilizer.

BEAN ROTOMIST No. 100F, reconditioned, $4,500.00. 65 Ford 600 gallon, 3 compartment, Bean 35, 30 hp Wisconsin, 2 power reels, $6,500.00. 64 GMC 500 gallon, 3 compartment, Bean 20, PTO, electric reel, $4,900.00. 310 Ryan tow type lawn aerator, $650.00. Gravely 408 tractor, $900.00. AAA Spraying, Inc., 942 N. 95th, Seattle, Washington 98103, 206 364-4283.

SEVERAL 50 FOOT SERVI-lifts mounted on GMC trucks. Call 401 725-2250.

FOR SALE — 1975 Vermeer TS-22" tree spade. Mounts on Bobcat or 3 pt. hitch. Excellent condition. $1800.00. 1976 Care tree 30" tree spade. Mounts on Bobcat or 3 pt. hitch. Mint condition. $2995.00. 1976 Care tree 36" tree spade. Mounts on 990 Bobcat, tractor, loader, or dozer. Mint condition. $4495.00. 1972 Vermeer TS-44T tree spade on 1974 GMC 1 ton. New spades. Good condition. $7800.00. Will send photographs upon request. Call or write: Spartan™ Tree Transplanting Equipment Company, 16084 S. Chandler Rd., East Lansing, Michigan 48823. Phone 517 351-1370. (We buy, sell, and repair high quality tree transplanting equipment).

1976 NATIONAL CRANE, 64' w/18' JUB on 1976 Ford F750 w/16' platform dump body. All heavy duty. New condition. $28,000. Aiton Tree Service, 104 Walter Street, Roslindale, Massachusetts. 617 769-0644 or 769-3649 after 6:00 p.m.

3 1977 MASSEY FERGUSON 20C diesel tractors, with or without 5 foot sidemount Cartner rotary mowers. Still under warranty. Thorpe's Mowing, Inc., 980 Williamson Road, Horsham, Pa. 19044. 215 646-3870.

USED CHIPPERS, Skyworkers and hydro-ax. Please call P. C. Gould Sales Company, Box 178, Essex, Conn. 06426. (203) 767-1636 Phil or Jeff Gould.

1960 FORD F600, very good condition, all major components re-built, custom made body with a 1972 John Bean sprayer 600 gallon tank, 50 GPM pump, with automatic refill attachment, good condition, $3,000.00. Call (914) 561-3490.

FOR SALE Several used Skyworkers and other associated items. Phone: Aerial Lift Repair, Inc. 203 878-0695.

1976-75-74 GMC 2½ ton 1300 gallon spray trucks, PTO, pumps, electric reels, low mileage. Call 713 838-1639.

FOR SALE — used John Bean sprayers, 10 gallons to 300 gallons. Also, trailer for 100 Rotomist, $200.00. 313 665-5338

1974 50 FOOT SKYWORKER on International with chip box, hydraulic outlet, 22,000 miles, extra clean, asking $17,800. Edwards Tree Service, 3190 Cooper-Foster, Vermilion, Ohio 44089. Phone 216 967-6750.

1974 VERMEER TS44T, mounted 1969 Chevrolet C50. Picture, price on request. 208 664-5914. 821-4th Street, Coeur d'Alene, Idaho 83814.

FOR SALE: Bean Rotomist, model 901, $2,500.00. 203 774-1061.

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SOD QUALITY Seeds Merion, Fylking, Delta, Park, Newport, Nugget, Adelphi, Cheri, Glade and Baron bluegrasses also fine fescues. Manhattan ryegrass. Custom mixing available. Michigan State Seed Co., Grand Ledge, Michigan 48837. Phone 517 627-2164.

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HELP WANTED — Qualified landscape, sprinkler, and grounds maintenance personnel needed by Colorado firm. Career oriented. Send resume of experience to: SaBell's Inc., 5555 West Ohio Avenue, Lakewood, Colorado 80226.

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FOR SALE

FOR SALE: Small tree service Co. Indiana, grosses over $96,000.00 a year, good potential for expansion. Equipment plus office equipment, miscellaneous tools and equipment, office building. Sell part or all. Box 181, Weeds Trees & Turf, Box 6951, Cleveland, Ohio 44101.

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B&B PINES, firs, spruces, 3'-15' and larger. 913 499-6323, Double-Bar-Pine Nursery, R1, Alta Vista, Kansas 66834.

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Meeting Dates

Seventh Annual Colorado Crop Protection Institute, Colorado State University Campus, Fort Collins, Colo., Nov. 9-10.

California Landscape Contractors Association half-day seminars, Stardust Hotel, Las Vegas, Nev., Nov. 10-11.

American Society of Agronomy, Crop Science Society of America and Soil Science Society of America Joint Annual Meeting, Los Angeles Bonaventure and Hilton hotels, Los Angeles, Calif., Nov. 13-18.

Irrigation Symposium & Equipment Show, Fresno Convention Center, Fresno, Calif., Nov. 16-19.

Tidewater Shade Tree Conference, Norfolk Botanical Gardens, Norfolk, Va., Nov. 17.

National Fertilizer Solutions Association 23rd Annual Convention & Chemical/Equipment Exhibition, Dallas Convention Center, Dallas, Texas, Nov. 28-Dec.1.

New Jersey Turfgrass Expo '77, Cherry Hill Hyatt House, Cherry Hill, N.J., Nov. 28-Dec. 1.

ACLA Management Information Systems Executive Management Seminar, Airport Hilton Inn, Denver, Colo., Dec. 1-2.

Kitten & Bear Chemicals Workshop Seminar, 4215 Tholozan Ave., St. Louis, Mo., Dec. 3.

Delaware Turfgrass Conference, Hercules C.C., Wilmington, Del., Dec. 5.

Ohio Turfgrass Conference and Show, Dayton, Ohio, Dec. 6-8.

Woody Ornamental's Winter Storage Symposium, Sheraton-Columbus Hotel, Columbus, Ohio, Dec. 9-10.

Nursery Industry-Residential Landscape Design Short Courses, Ohio Agricultural Research and Development Center, Wooster, Ohio, Dec. 13-15.

International Society of Arboriculture, Indiana Chapter Annual Meeting, Stouffers Indianapolis, Indianapolis, Ind., Jan. 3-5.

Northeastern Weed Science Society 32nd Annual Meeting, Americana Hotel, N.Y., N.Y., Jan. 4-6.

Turf Grass '78, Maryland Turf Grass Council, Sheraton Lanham Inn, Lanham, Md., Jan. 8-12.

Western Association of Nurserymen Trade Show and 88th Annual Meeting, Hilton Plaza Inn, Kansas City, Mo., Jan. 8-10.

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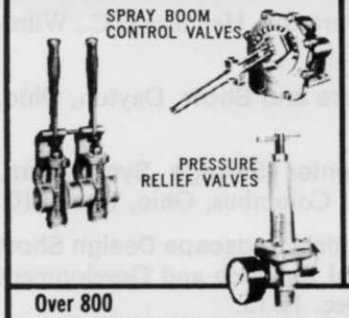

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Meeting Dates

16th Annual Nebraska Turfgrass Conference & Training School, University of Nebraska Center for Continuing Education, East Campus, Lincoln, Nebr., Jan. 9-11.

48th Annual Michigan Turfgrass Conference, Kellogg Center, Michigan State University, East Lansing, Mich., Jan. 10-11

Southeastern Pennsylvania Turf School and Trade Show, Westover Country Club, Jeffersonville, Penna., Jan. 10-11.

Alumni Association of the Niagara Parks Commission School of Horticulture Annual Educational Conference, Park Motor Hotel, Niagara Falls, Ontario, Jan. 12-14.

Kentucky Shade Tree Association Annual Meeting and Trade Show, Hyatt Regency Lexington, Lexington, Ken., Jan. 12-14.

New Hampshire Turf Seminar, Sheraton-Wayfarer Motor Inn, Bedford, N.H., Jan. 12-13.

The Mid-Am Trade Show, O'Hare Exposition Center, Chicago, Ill., Jan. 15-18.

The Pennsylvania State University Turfgrass Conference, J. Orvis Keller Conference Center, University Park, Penna., Jan. 16-19.

National Conference for Forestry Research, Ramada Inn, Rosslyn, Va., Jan. 17-19.

Southern Weed Science Society 31st Annual Meeting, Braniff Place, New Orleans, La., Jan. 17-19.

Kansas Recreation and Park Association Annual Conference, University of Kansas Student Union, Lawrence, Kan., Jan. 18-20.

International Society of Arboriculture, Kentucky Chapter Annual Meeting, Executive West, Louisville, Ken., Jan. 19.

International Society of Arboriculture, Penn-Del Chapter Annual Meeting, Marriott Motor Hotel, Philadelphia, Penn., Jan. 19-20.

International Society of Arboriculture, Ohio Chapter Annual Meeting, Sheraton-Columbus, Columbus, Ohio, Jan. 22-26.

International Society of Arboricultural, New Jersey Chapter Annual Meeting, Mercer County Community College, Trenton, N.J., Jan. 23

Connecticut Tree Protective Association 56th Annual Meeting, Sheraton Park Plaza Hotel, New Haven, Conn., Jan. 25.

Mid-Atlantic Agricultural Trade Show and The Virginia Pesticide Association Joint Meeting, Richmond, Va., Jan. 25-26.

Northern California Turfgrass & Environment Landscape Exposition, San Mateo County Fairgrounds, San Mateo, Calif., Jan. 25-26.

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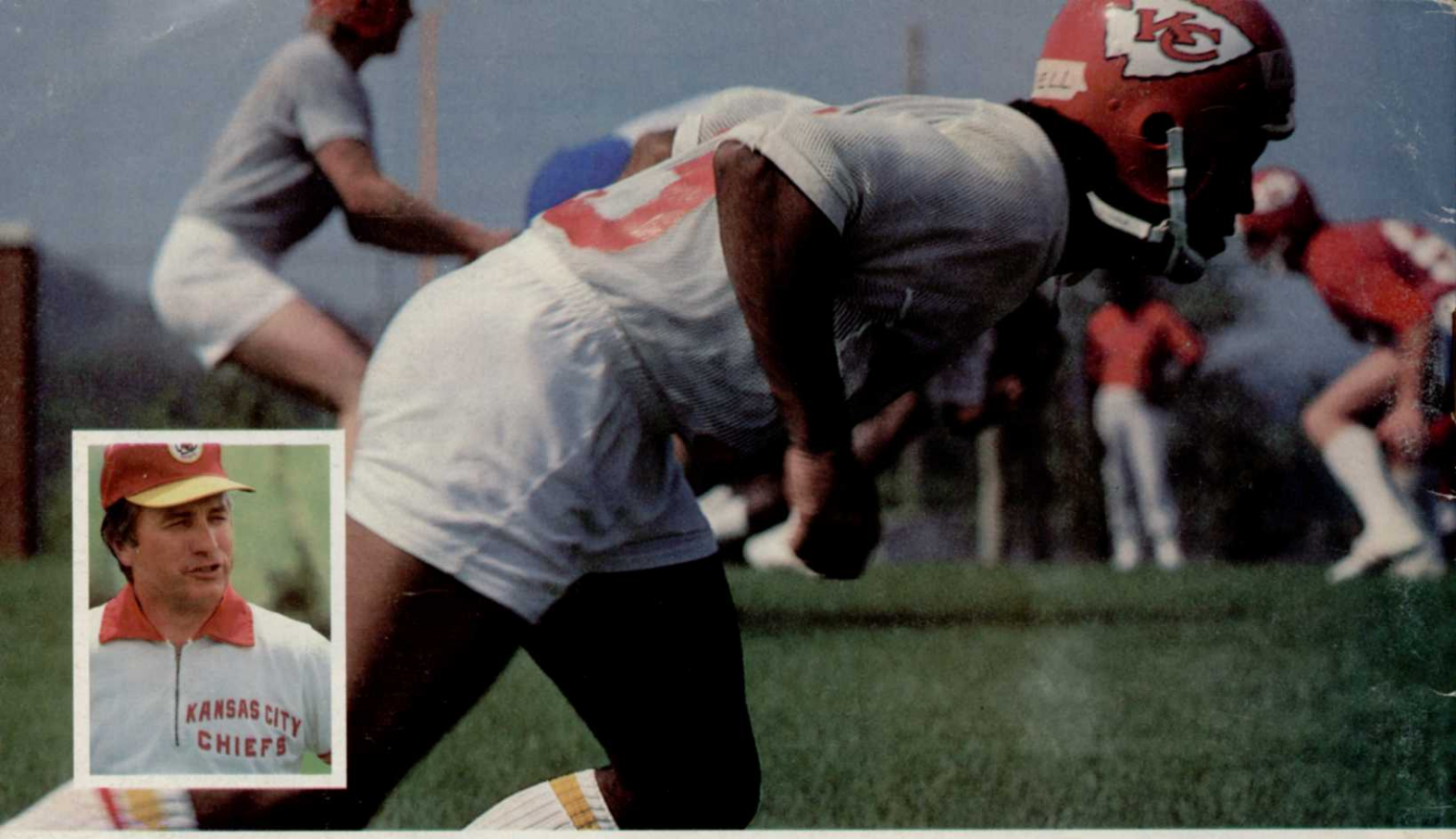

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